

CLAIMS

1. An expired dendritic cell having characteristics of the following (E1) to (E3):
(E1) not shifting into a mature type due to an action of a natural immune stimulant or a permanent immune potentiator;
5 (E2) having the same shape as immature DC; and
(E3) expressing IL-10.
2. The expired dendritic cell according to claim 1 wherein
10 said dendritic cell is a human dendritic cell.
3. The human expired dendritic cell according to claim 2 having the following characteristics:
(E1') not shifting into a mature type due to an action of LPS and
15 anti-CD40 monoclonal antibody;
(E2) having the same shape as immature DC; and
(E3) expressing IL-10.
4. The human expired dendritic cell according to claim 3
20 further having the following characteristics:
(E4) having an expression level of CD80 nearly equivalent to that on the immature DC; and/or
(E5) having an expression level of CD83 nearly equivalent to that on the immature DC.
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5. The human expired dendritic cell according to claim 4 further having at least one of the following characteristics:
(E6) having a phagocytic activity for microbeads nearly equivalent to that of the immature dendritic cells;
30 (E7) expressing MHC class I at a high level;
(E8) not activating unreacted T cells in the presence of an antigenic peptide; and
(E9) expressing TLR4/MD2 at lower level than the immature DC.
- 35 6. Permanently activated dendritic cells having the following characteristics:
(M2-1) having projecting dendrites and forming aggregation clusters;
(M2-2) being capable of activating unreacted cytotoxic T cells
40 (CTL);
(M2-3) having stable properties under the action of anti-CD40 monoclonal antibody; and

(M2-4) showing a high expression level of at least one member selected from the group consisting of CD80, CD83 and CD86.

7. The permanently activated dendritic cells according to claim 6 wherein said dendritic cells are cells derived from human, having the following characteristics:

(M2-1) having projecting dendrites and forming aggregation clusters;

(M2-2) being capable of activating unreacted cytotoxic T cells (CTL);

(M2-3) having stable properties under the action of anti-CD40 monoclonal antibody; and

(M2-4') expressing CD80 and CD83 at high levels.

8. The permanently activated dendritic cell according to claim 7 further having at least one of the following characteristics:

(M2-5) expressing FcγR at a low level (FcγR^{low});

(M2-6) expressing MHC-I at a high level (MHC-I^{high});

(M2-7) expressing MHC-II at a high level (MHC-II^{high}); and

(M2-8) expressing IL-12 p40 at a high level.

9. A method for preparing expired dendritic cells (expired DC) comprising a step of activating immature dendritic cells with a natural immune stimulant to induce transiently activated mature dendritic cells (M1DC), and a step of culturing the M1DC in the absence of a permanent immune potentiator.

10. A method for preparing permanently activated mature dendritic cells (M2DC) comprising a step of treating immature dendritic cells with a permanent immune potentiator.

11. A method for preparing permanently activated mature dendritic cells (M2DC) comprising a step of activating immature dendritic cells with a natural immune stimulant to induce transiently activated mature dendritic cells (M1DC), and a step of culturing the M1DC in the presence of a permanent immune potentiator.

12. A method for preparing transiently activated mature dendritic cells (M1DC) characterized by treating immature dendritic cells with a natural immune stimulant.

13. An anti-cancer agent wherein the human permanently activated dendritic cell (M2DC) according to claim 7 or 8 or the human M2DC prepared by the method according to claim 10 or 11 is an active ingredient.

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14. An anti-pathogen agent wherein the human permanently activated dendritic cell (M2DC) according to claim 7 or 8 or the human M2DC prepared by the method according to claim 10 or 11 is an active ingredient.

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15. An immunosuppressive drug wherein the expired dendritic cell according to claims 1 to 5 or the expired dendritic cell obtained by the method according to claim 9 is an active ingredient.

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16. A method for treating cancer characterized in that the human permanently activated dendritic cell (M2DC) according to claim 7 or 8 or the human M2DC prepared by the method according to claim 10 or 11 is administered to a human patient with cancer.

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17. A method for transplantation where an immunological rejection is inhibited, comprising introduction of human expired dendritic cells according to claims 2 to 5 or human expired dendritic cells obtained by the method according to claim 9 derived from a human transplantation donor into a human recipient, and then introduction of an organ or a tissue of the human transplantation donor into the human recipient.

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18. The method according to claim 17 wherein said organ or tissue is bone marrow.

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